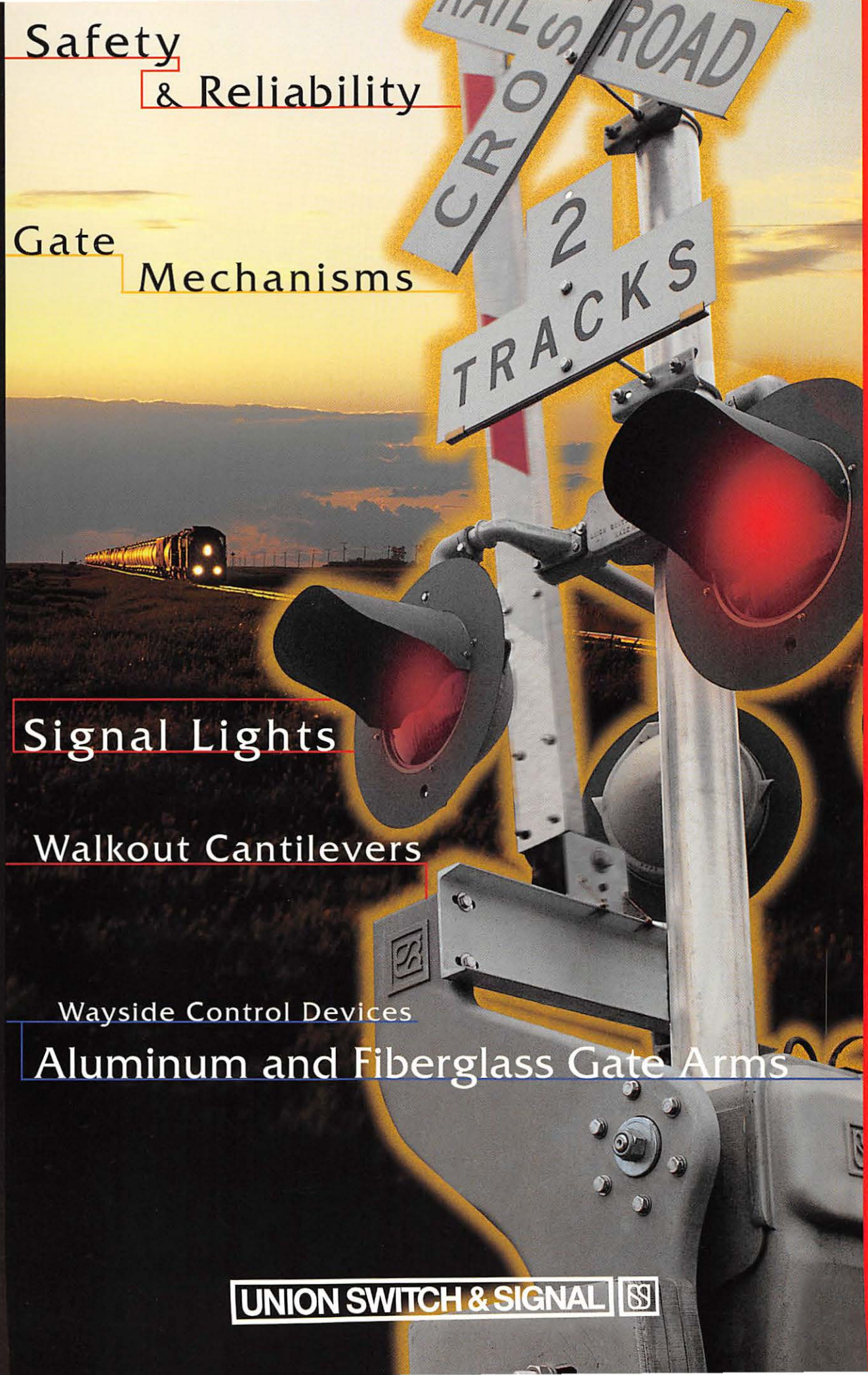
Highway Crossing Systems

Safety & Reliability

Gate Mechanisms



Signal Lights

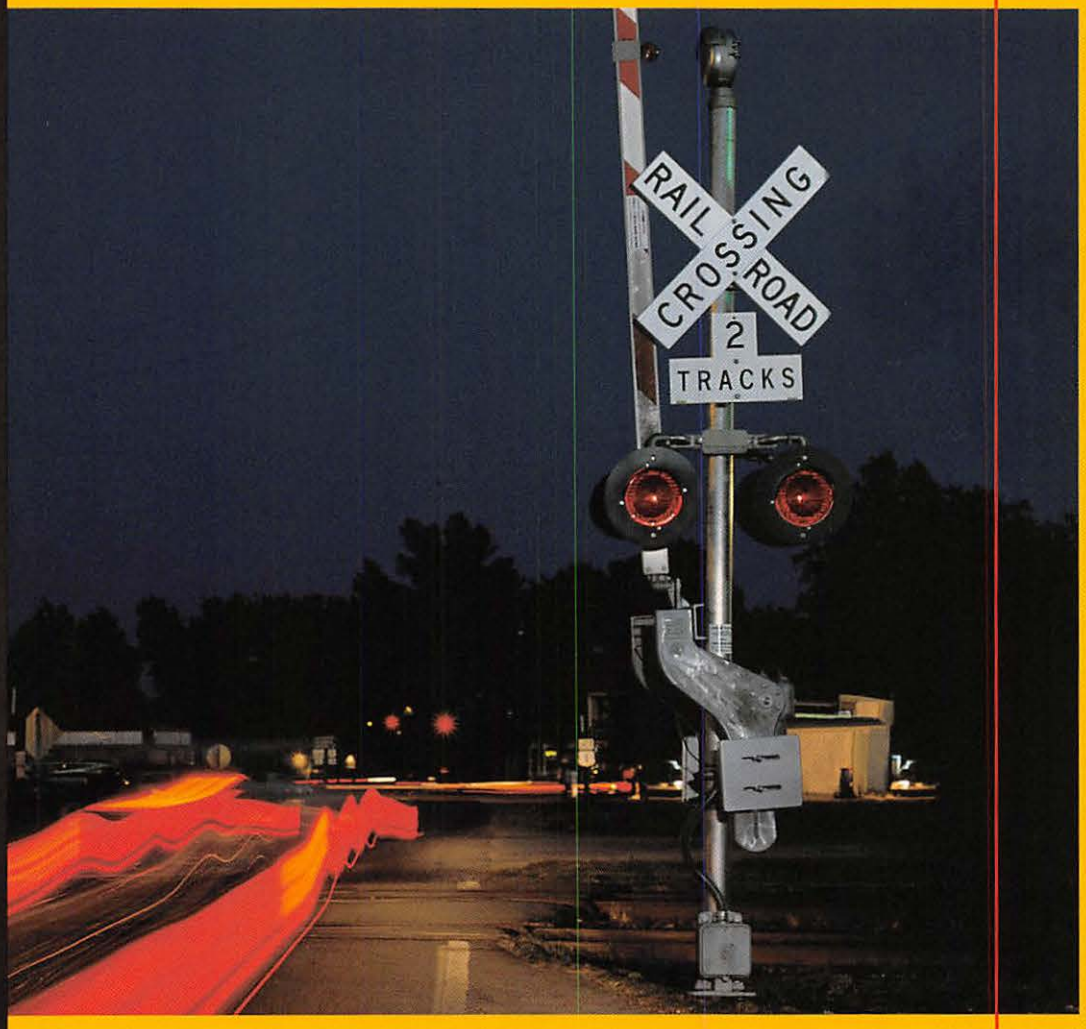
Walkout Cantilevers

Wayside Control Devices

Aluminum and Fiberglass Gate Arms

UNION SWITCH & SIGNAL

Highway Crossing Systems



Union Switch & Signal's Highway Crossing Product Line:

- Gate Mechanism
- Aluminum and Fiberglass Gate Arms
- Walkout Cantilevers
- Signal Lights
- Wayside Control Devices & Factory-Wired Housings
- Engineering Services

A recommitment to the business of highway crossing systems

Union Switch & Signal began supplying highway crossing warning equipment in 1922.

Today, Union Switch & Signal has recommitted itself to delivering top-quality highway crossing warning products, systems and services. We have re-engineered our products in response to the needs and desires of our customers.

The result is a line of highway crossing products and systems that have been tested by numerous railroads. Union Switch & Signal highway crossing systems and equipment have received the "green light" in locations worldwide.

Market acceptance at home and abroad

Union Switch & Signal's highway crossing equipment has been tested or accepted by numerous railroads and transit authorities around the world. These include:

Alaska Railroad
Amtrak
Burlington Northern/Santa Fe
Canadian National Railway
Canadian Pacific Railway
Conrail
CSX Transportation
Florida East Coast Railroad
Greater Cleveland Regional Transit Authority
Houston Belt & Terminal Railroad
Long Island Railroad
Maryland MTA (Baltimore Metro)
New Jersey Transit
Norfolk Southern Railway
Port Terminal Railroad Association (Houston)

Queensland Railway (Australia)
Southern Pacific Railroad
Union Pacific Railroad
VIAL (Argentina)

Union Switch & Signal

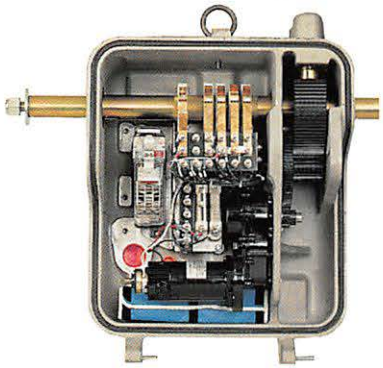
Model 95 Gate Mechanism

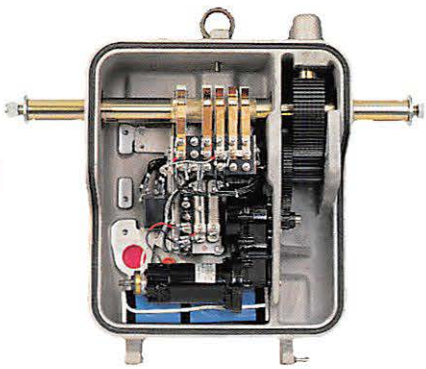
Completely redesigned to meet or exceed AAR and American Association of Highway Officials' specifications, the Model 95 Gate Mechanism is a compact, easily maintained device. It features a cast aluminum housing and cover and is driven by a highly efficient and durable gear motor. The result is a smaller, lighter unit that is extremely serviceable and stronger than other models. In fact, the Model 95 is 100 pounds lighter than previous mechanisms yet has a stall torque of 2,000 foot-pounds.

Features

- Capable of indefinite motor stall
- Self-restoring internal circuit breakers
- Completely re-engineered for increased durability and serviceability
- Cast aluminum housing
- Available with vital or non-vital relays
- Highly efficient drive motor and gears
- Heavy duty horizontal & vertical buffers
- Lightweight, compact design
- Built-in thermal and surge protection
- "Break-away" gate arm adapter
- Mechanisms with pedestrian and sidewalk crossing arms available

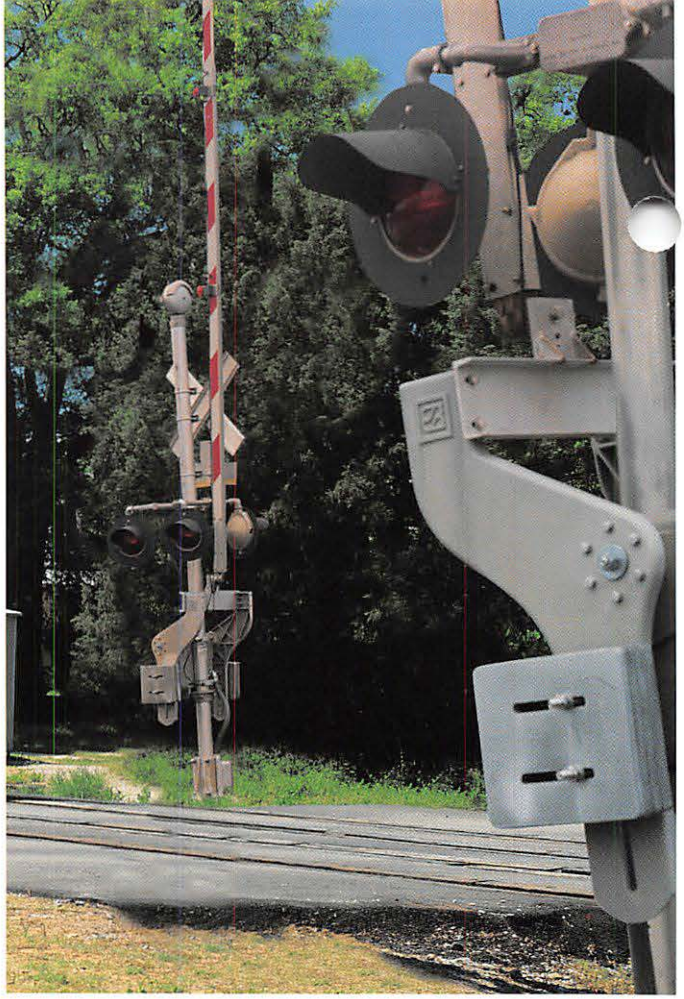
Gate mechanism with vital relay





Gate mechanism without vital relay

The electrical contact assembly, the gear motor, and the gear train are readily accessible.



Designed to exceed AAR and American Association of Highway Officials' specifications, the Model 95 Gate Mechanism is the heart of US&S's highway crossing systems.

Reliability

The Model 95 has built-in self-restoring internal circuit breakers for thermal and voltage protection, which guard the device from damage due to harsh weather conditions, electrical storms and surges. It is also resistant to overload damage from gate arm obstructions.

Serviceability

The Model 95 Gate Mechanism represents a leap into the use of modern techniques and materials. Its modular design features an uncluttered mechanism with fewer moveable parts. Each unit part can be easily accessed and replaced in the field if necessary, making the Model 95 simpler to service.

Gate Arms

Union Switch & Signal gate arms are available in adjustable lengths, from 17 to 40 feet. Each gate arm has one fixed aluminum section and up to two aluminum or fiberglass telescoping sections. The gate arms attach to the Model 95's standard "break-away" adapter, which is designed with shear pins to prevent major damage if the arm is struck by a vehicle.

All arms have either engineering-grade or high-intensity red and white reflective striping. Each arm section has either four- or seven-inch two-way lights with coiled cord wiring that plugs in for easy installation.

Features

- Aluminum and fiberglass arms for easy installation
- Telescoping arms, from 17 to 40 feet
- Standard or high-intensity red & white reflective striping
- 4- and 7-inch two-way lights with plug in wiring
- Three gate arm lights with adjustable deflection angles to meet varying field conditions
- Various grades of red and white diagonal striping
- Attaches to a break-away adapter to minimize vehicular damage

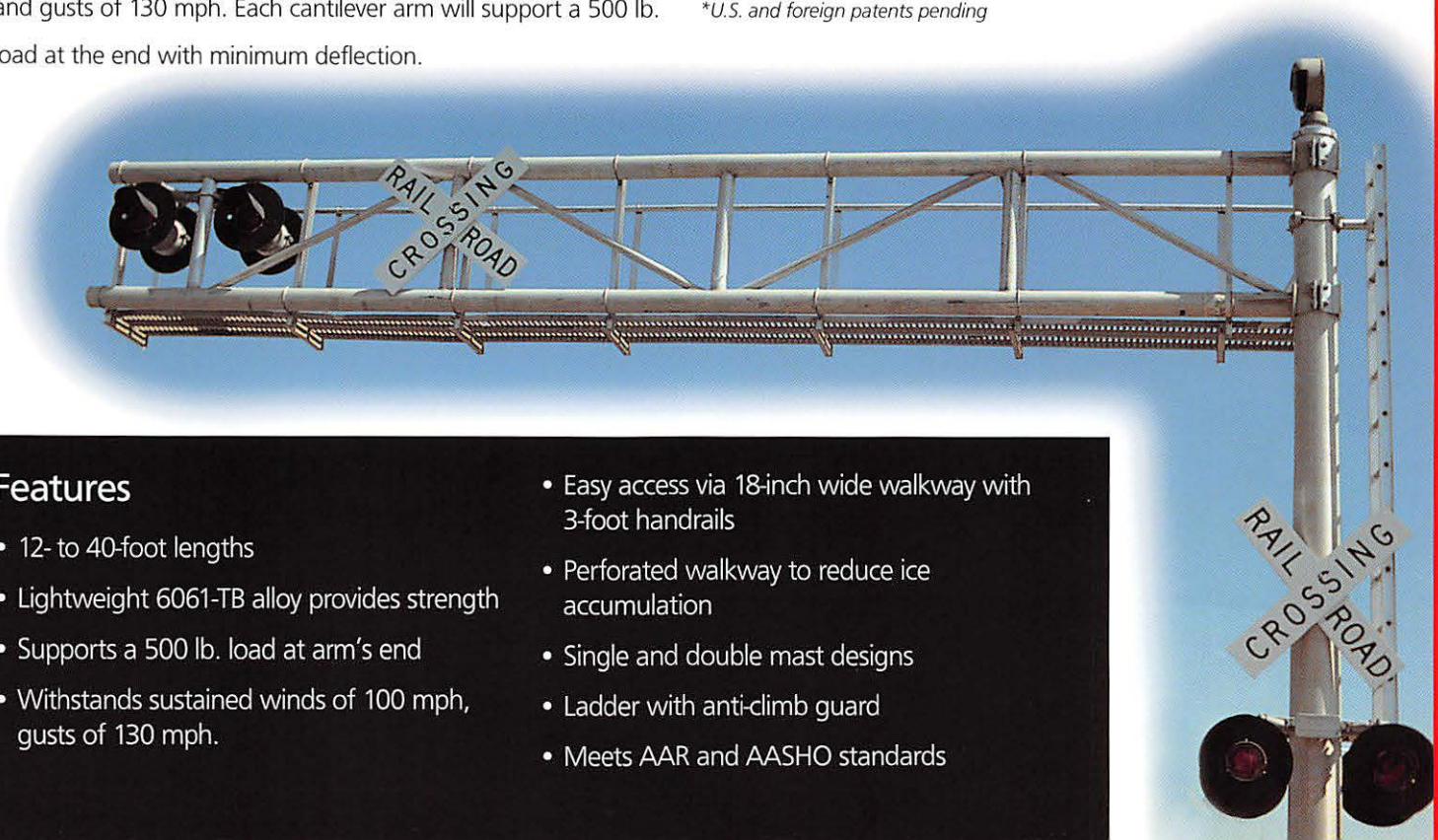
Cantilevers

Union Switch & Signal offers a full line of specially-designed cantilevers*, available in lengths from 12 to 40 feet in 2-foot increments.

Union Switch & Signal fabricates each 6061-TB alloy design in-house. The result is a strong, lightweight unit that is easy to install in the field and is able to withstand winds of 100 mph, and gusts of 130 mph. Each cantilever arm will support a 500 lb. load at the end with minimum deflection.

A ladder and 18-inch walkway with 3-foot handrails permit easy access to signals. The walkway is perforated to allow rain and snow to fall through readily, reducing ice accumulation during inclement weather. A single-mast will support cantilevers up to 26 feet. A double-mast is required for cantilevers from 26 to 40 feet. All masts mount on a 4-bolt foundation.

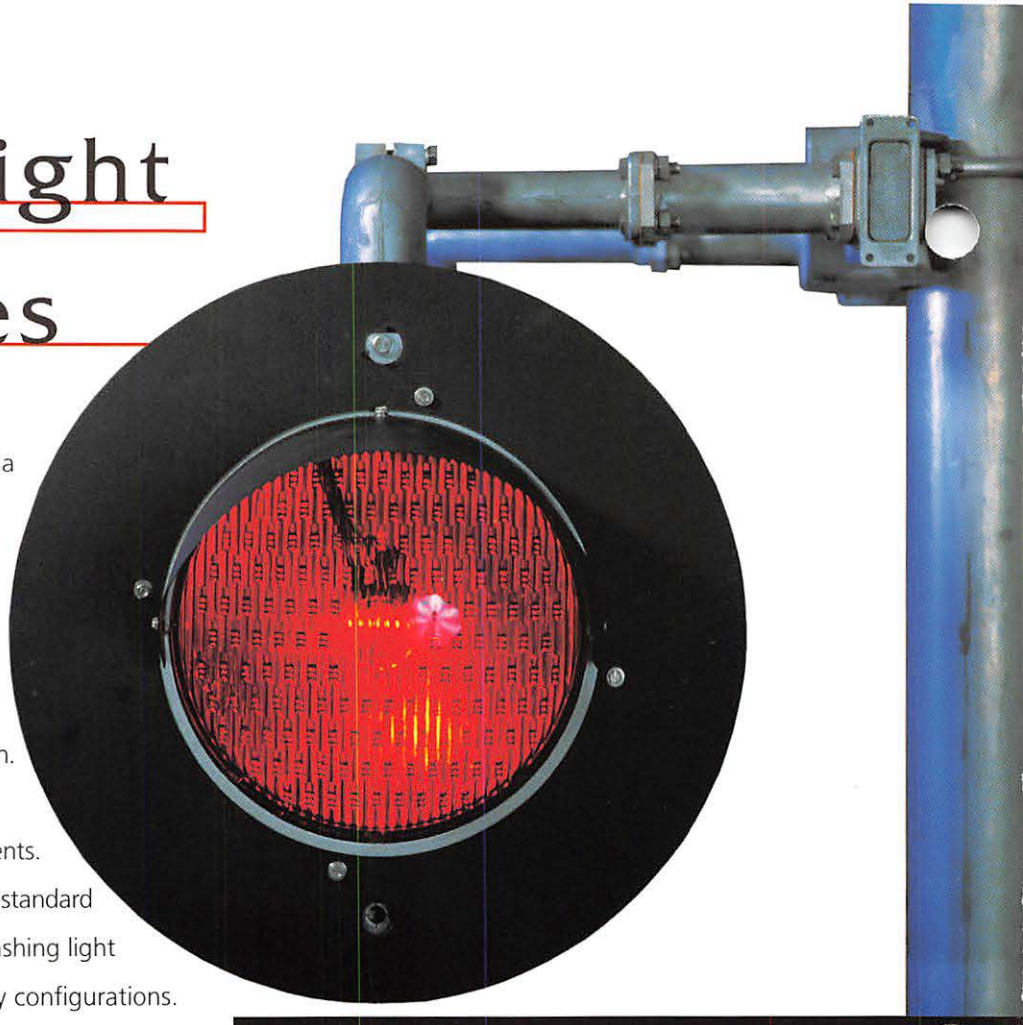
**U.S. and foreign patents pending*



Features

- 12- to 40-foot lengths
- Lightweight 6061-TB alloy provides strength
- Supports a 500 lb. load at arm's end
- Withstands sustained winds of 100 mph, gusts of 130 mph.
- Easy access via 18-inch wide walkway with 3-foot handrails
- Perforated walkway to reduce ice accumulation
- Single and double mast designs
- Ladder with anti-climb guard
- Meets AAR and AASHO standards

12-inch Signal Light Assemblies



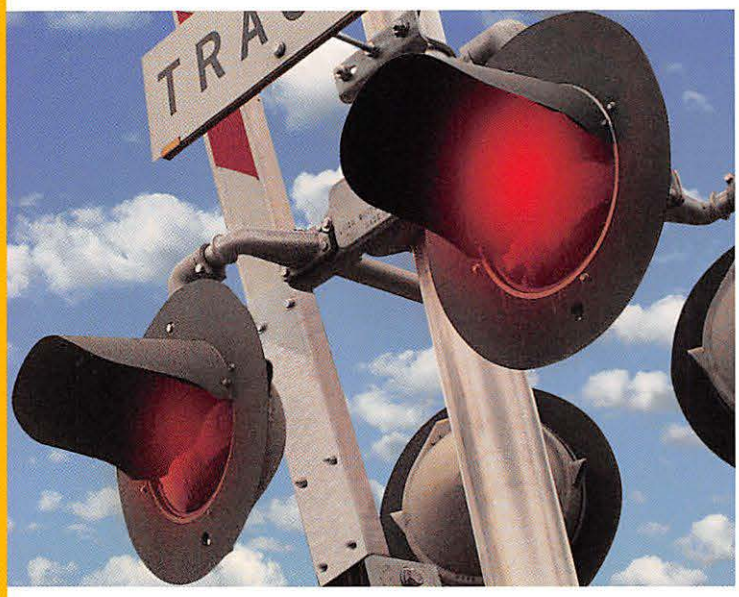
Union Switch & Signal's 12-inch HC-120LED and HC-120B incandescent signal lights offer a number of attractive options.

The HC-120LED light is designed to maintain sufficient light output in the event of a discrete LED failure. The lamp assembly also incorporates both lightning and surge protection.

The HC-120B features a number of improvements. The redesigned reflector lens sets the industry standard for precision and light quality. In addition, flashing light assemblies are available in one- and two-way configurations.

Ease of installation and maintenance.

The cast aluminum enclosure comes equipped with an AAR-approved terminal strip that allows quick connect and disconnect. It also has an internal sighting device that allows one person to adjust the aim at the crossing. The HC-120LED can be supplied with the HC-120 enclosure, hood and background. The LED portion (HC-120LED-R) is also available separately for upgrading existing HC-120B enclosures.



HC-120-LED Features

- 12-inch LED design utilizes current application specific lens for enhanced off-center viewing
- Uses latest ultra-bright LED technologies
- Up to 100,000 hours life
- Cast aluminum housing
- 3-point mounting bracket
- AAR terminal strip for easy connection/disconnection
- 8.5 - 14.2 volt AC or DC operation
- Meets AAR and AASHO standards
- Uses existing lens to maintain existing application specific light dispersion requirements

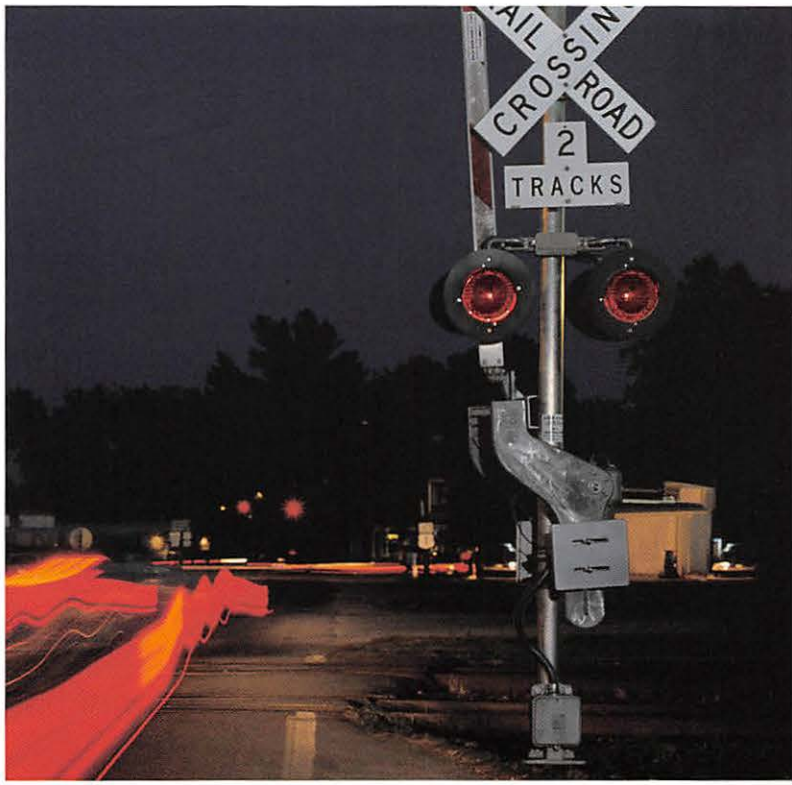
HC-120B Features

- Redesigned reflector
- 3 lens deflection patterns for varying field applications
- Cast aluminum housing
- 3-point mounting brackets
- Internal aiming device
- Terminal strip for easy connect/disconnect

Highway Crossing Controls

Union Switch & Signal can provide highway control warning systems featuring any of the following train detection devices:

- **Standard Type C Track Circuit.** This ac-dc track circuit is designed to activate the crossing equipment any time the track circuit is shunted by an oncoming train. It will remain activated as long as the train is within the approach zone. This track circuit is economical and provides good shunting characteristics where rails tend to be rusty.
- **Motion Sensor.** This device monitors the impedance of the track circuit within the approach block. Changes in the track circuit impedance within predetermined levels are interpreted as a moving train, and the crossing equipment is activated. The system remains activated as long as the train moves and causes the track circuit impedance to change.
- **Audio Frequency Overlays.** The AFO circuit introduces an audio frequency signal into the track as a train approaches. This signal is detected by a receiver at the crossing, activating the grade crossing equipment. Designed for use without insulated rail joints, AFO track circuits are particularly useful where insulated rail joints are a problem or on continuously welded rails. It can also be superimposed on existing dc track circuits. Low-powered transmitters are used for approach lengths of less than 3,500 feet, high-powered transmitters for longer lengths. The AFO provides 16 different frequencies, divided into two groups for use on either single or double tracks.



- **Grade Crossing Predictor.** Utilizing the basic technology found in the motion sensor, the grade crossing predictor uses a microprocessor to analyze the rate of impedance change and thereby predict the arrival of the train regardless of its speed. This device is widely used in the United States where regulations require that crossing equipment cannot be activated until a set time before a train's arrival.

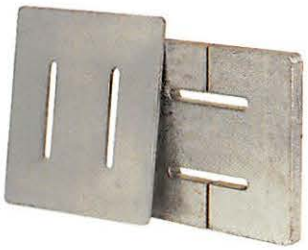
Factory-wired Houses & Cases

Union Switch & Signal offers a full-line of houses and cases that are factory-wired with the equipment required at a particular crossing. As a full-line manufacturer of railway signaling and control systems, we also supply required power equipment, including inverters, batteries and battery chargers. Wayside equipment is designed and equipped with lightning and environmental protection.

The rest of the hardware

Union Switch & Signal offers a complete assortment of highway crossing hardware products:

- Aluminum masts
- Junction box bases
- Bells, electro-mechanical and electronic
- High-wind brackets
- Gate mechanism counterweights
- Signs



2 TRACKS

Highway crossing engineering services

Providing the maximum level of train approach warning is the primary purpose of highway crossing warning systems. To that end, Union Switch & Signal offers a full complement of highway crossing engineering services to meet the requirements of any particular highway crossing warning system application.

Engineering Services

- Field surveys
- Circuit design
- Material procurement
- Installation supervision
- Factory testing
- Installation
- Field tests

Customer Satisfaction

Through Quality

Quality Assurance.

Union Switch & Signal products and systems are in use and trusted by every Class I Railroad in North America and many transit systems around the world. The reason is a major focus on and a corporate commitment to quality assurance.

DNV Certification, Inc.

ISO 9001 REGISTERED FIRM

- Union Switch & Signal was the first full-line railroad supplier in North America to achieve ISO 9001 registration.
- Union Switch & Signal products meet AAR M-1003 Quality standards.

Quality Service After the Sale

Union Switch & Signal supports its products and systems with comprehensive training and product maintenance service. We supply our customers with detailed service manuals and technical information so that they can thoroughly understand our products and systems.

Customer/Product Assistance

If a customer requires product-service assistance, our worldwide service facilities offer unsurpassed response time. Equipment manufactured years ago may be returned to us for maintenance or repair. During the interim, we have large inventories of replacement parts to minimize downtime. Our field technicians are also available for on-site servicing.

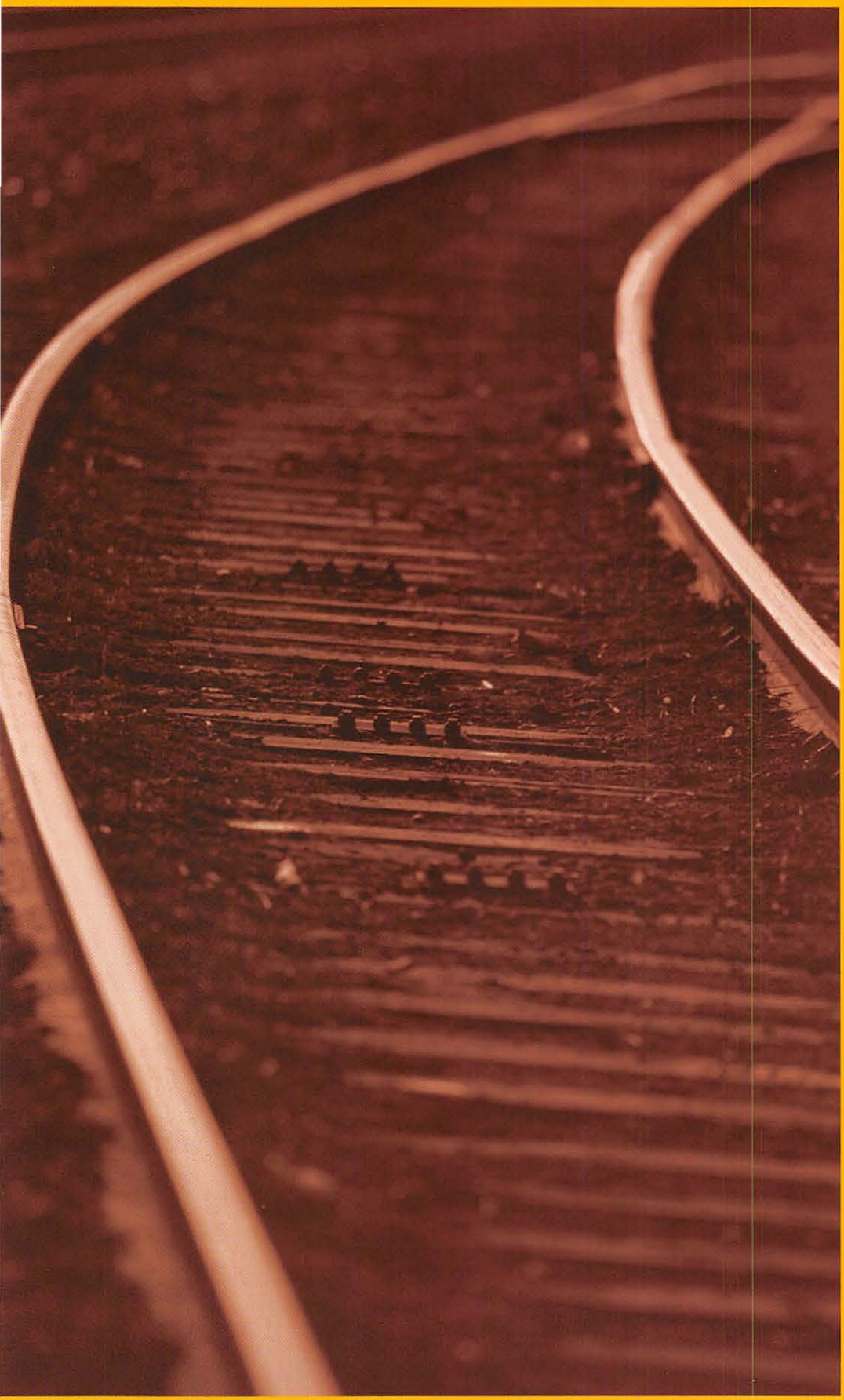
- Guaranteed 48-hour replacement parts turnaround. For customers who desire the peace of mind of guaranteed turnaround time for their repair orders, Union Switch & Signal offers an optional "Advanced Exchange" on most of our parts. By registering their products with us, customers are assured of the availability of an exchange unit within 48 hours of the time they contact us for repair service.
- 24 hours/day, 7 days/week information via R.A.I.L. When you have a problem, you need accurate, specific answers from knowledgeable engineers who can analyze the problem and determine the best solution. That's exactly what you get with Union Switch & Signal's unique, toll-free Rapid Action Information Link (R.A.I.L).

Simply call

1-800-652-7276, ask for a member of the R.A.I.L. Team and get the right answers, right now. You can also reach R.A.I.L. by e-mail: railteam@switch.com

UNION SWITCH & SIGNAL SEVEN DAYS A WEEK RAIL 1•800•652•7276 24 HOURS A DAY RAPID ACTION INFORMATION LINK

"Switch" to Quality



In the end, it's quality that counts. For more information on Union Switch & Signal quality highway crossing products, contact your Regional Sales Manager or call the R.A.I.L. Team at

1-800-652-7276.

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Union Switch & Signal

Founded by George Westinghouse in 1881, Union Switch & Signal is recognized as a world leader in the design and manufacture of railway signaling and control equipment.

Today, Union Switch & Signal is the North American regional arm of Ansaldo Signal, a leader in the design, manufacture and service of signaling, automation and control equipment and systems for the railroad and mass transit industries worldwide.

Union Switch & Signal products and control systems have long been a staple of the rail industry and are in operation by every Class I railroad in North America and by numerous rail transit operators in North America and around the world.

Through the years, Union Switch & Signal has played a key role in the evolution of railway signaling and control technologies in the U.S. Among its innovations are the development of alternating current track circuits in 1901, the introduction of electro-mechanical relay-based interlockings in 1913, the installation of the first computer-controlled freight car classification yard in 1966 and the first computerized traffic control system in 1966. As well, in 1924, the company designed and built the first remote controlled classification rail yard, and in 1985, the first solid-state interlocking in the U.S.

A long history

The amalgamation in 1997 of Union Switch & Signal and its sister companies in France, Italy and Sweden into Ansaldo Signal now makes available to Union Switch & Signal customers all the advantages offered by a company with worldwide technological and product capability, while retaining the convenience and comfort of doing business with a well-known, local supplier.

Union Switch & Signal offers the rail industry unprecedented capability and dependability in every phase of rail transportation, from reliable highway crossing signaling equipment to complete railroad control systems.

signals quality.

ANSALDO

UNION SWITCH & SIGNAL

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